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LETTER AND COMMENTS FROM U S EPA REGION I REGARDING DRAFT FINAL SAMPLING AND ANALYSIS PLAN ADDENDUM FOR PERFLUORINATED COMPOUNDS
NAS SOUTH WEYMOUTH MA
03/28/2011
U S EPA REGION I

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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BOSTON, MA 02109-3912

March 28, 2011

Brian J. Helland, P.E.
BRAC Program Management Office NE
4911 South Broad Street
Philadelphia, PA 19112-1303

Re: *Draft Final Sampling and Analysis Plan Addendum (Field Sampling Plan and Quality Assurance Project Plan) – February 2011 – Perfluorinated Compounds, Former Naval Air Station South Weymouth, Weymouth, Massachusetts*

Dear Mr. Helland:

The U.S. Environmental Protection Agency (EPA) has completed its review of the above-referenced document (and accompanying February 3, 2011, Navy response to EPA comments on the December 2010 draft document) and offers the attached comments and recommendations. The EPA requests that a meeting be convened, at your earliest convenience, to discuss and resolve the issues outlined in the proceeding pages.

In the interim, please feel free to contact me at (617) 918-1393, should you have any questions in regards to this matter. I look forward to speaking with you soon.

Sincerely,

Carol A. Keating

Carol A. Keating
Remedial Project Manager
Federal Facilities Superfund Section

Attachment

cc: Dave Barney, USN-Weymouth
Dave Chaffin, MADEP
Kevin Donovan, SSTTDC
Phoebe Call, TTNUS
Bill Brandon, EPA
Rick Sugatt, EPA

EPA Comments on the Draft Final Sampling and Analysis Plan (SAP) Addendum (Field Sampling Plan and Quality Assurance Project Plan) – February 2011 Perfluorinated Compounds, Former Naval Air Station South Weymouth, Weymouth, Massachusetts and the February 3, 2011, Response to Comments on the December 2010 - Draft SAP

General Comments

1. *Conceptual Site Model (CSM)* - The CSM provided is well presented and supports the Navy's proposed sampling strategy. However, a detailed discussion regarding several improvements which are needed with respect to the CSM is included below (SAP Addendum Worksheet #9 -- Conceptual Site Model; Figure 5, etc.). Updating the CSM appears to be necessary in that the conceptualization of the release /source area drives the sampling strategy. A number of EPA's observations in this regard suggest additional sampling locations will be needed, as summarized in the following points:

   - Releases at Hangar 1 may have occurred to the surface or subsurface at the fill pipes, at the actual tank itself, as well as to the subsurface distribution network. Additional soil sampling is needed in these areas.
   - The engineered drainage system internal to and external to Hangar 1 may have also received PFC discharge. A detailed site plan with all pertinent engineered systems and subsurface drainage features needs to be compiled so that the sampling program can be validated and/or augmented in this regard.
   - The cranberry bog/wetland to the east of the east branch of French Stream may have received direct inputs of surface runoff containing PFCs. The sampling program needs to be augmented in this area.
   - The intermittent drainage channels and associated wetlands to the west of the FFTA/runway French Stream may have also received direct inputs of surface runoff containing PFCs. Groundwater has also been observed to discharge here. The sampling program needs to be augmented in this area.
   - The fate and transport of PFCs in deep groundwater is not clear. Additional future sampling of deep ground water may be called for.
   - The subsurface fate and transport of PFCs generally needs to be better understood at this site. The position of the current and former water table, including the historic range of water table fluctuation could be further clarified with respect to specific sampling locations and depths.
   - Specific ground water, surface water, and sediment sampling locations are recommended below based on a review of existing information.

2. *Ground Water, Surface Water, and Sediment Sampling Areas* - EPA's evaluation of ground water flow paths and the CSM suggests that there are several additional areas where groundwater, surface water, and sediment sampling are needed. The attached figure (Figure A) indicates nine areas where information at this time suggests that unmonitored PFC migration pathways may exist. These are discussed sequentially as follows:

- Area 1: The ground water flow field is not well constrained to the west of the general vicinity of Hangar 1 and head data from past dates suggests the possibility of westward-directed groundwater flow. In this respect, MW09-006 and MW05-034 should be included in future ground water sampling events. Additional well control is needed between MW05-031 and MW05-034, to the west of MW05-034, to the west of MW05-031, and south of MW05-031 for collection of additional ground water samples. At a minimum, several deep and shallow overburden piezometers are needed in this area in order to improve resolution on the ground water flow field here.

- Area 2: According to the groundwater flow field measured on April 20, 2010 (Figure 3), there is currently little, if any, monitoring down-gradient of the FFTA to the southwest. In this regard, FFTA-MW-11 should be added to the sampling program. Additional shallow overburden well control is also needed in the down-gradient areas highlighted as "Area 2". See also discussion for Areas 3, 4, 5, 6, 7, 8, and 9, below.

- Area 3: This area is centrally located in the region where groundwater flow lines from Hangar 1 and the FFTA become focused towards the southwest. A number of shallow and deep overburden control points are needed here to allow collection of ground water level data and ground water quality samples.

- Area 4: Ground water from both known PFC source areas appears to converge and flow southwestward to this area near the southwest corner of the base. Ground water as well as surface water and sediment (see Area 7 discussion, below) are in need of additional sampling in this general area. Several shallow and deep overburden control points are needed in this area, on both sides of French stream, in order to allow for collection of ground water level data and ground water quality samples, as well as to determine the nature of ground water interactions with French stream.

- Area 5: The CSM needs to be updated to include the potential for direct input and/or surface runoff of PFCs into the cranberry bog/wetland areas bordering the former FFTA to the east. Additional surface water and sediment sampling is needed in this area.

- Area 6: Relative to the FFTA, southwestward directed groundwater has been observed to discharge to intermittent drainage channels just west of MW-11. Surface water drainage channels in this area should be included on the figures. Additional surface water and sediment sampling should be directed to Area 6.

- Area 7: Sediment and surface water sampling is needed in Area 7 in order to determine impacts from potentially discharging ground water in this reach of French Stream. The Area 7 sampling area should overlap the Area 4 ground water area of interest, and it should extend some additional distance

downstream within French stream in order to assess potential in-stream transport. See also Area 4, discussion, above.

- Area 8: The east branch of French Stream needs additional sampling consideration with respect to groundwater, surface water, and sediment. While SW/SED-3 addresses surface water and sediment just down-gradient of the former FFTA, the potential for ground water surface water interactions suggests a broader sampling approach is needed with respect to this south-directed contamination migration pathway. Both wells FFTA-MW-46 and FFTA-MW-14 are contaminated above standards, and there is currently no shallow overburden monitoring proposed to the south of these locations, along the axis of the east branch of French Stream. Given that PZ-11D, located approximately ½ mile south of the FFTA, detected low levels of both PFOS and PFOA, consideration should be given to additional shallow and deep overburden ground water control points.

- Area 9: Area 9 (sediment/surface water) overlaps area 8 (ground water). An overall sampling approach with attempts to determine ground water/surface water interactions in this area, and commensurate sampling strategy, is needed.

3. Up-gradient sample locations; Results from the "up-gradient" wells (BW-MW-31, and MW05-301) beg comparison and further discussion. Results from BW-MW-31 (no detections above the 2 µg/l detection limit) are to be expected from a true up-gradient well. MW05-301 appears to be in an area which has been impacted by PFC activities in and around Hangar 1. This is also perhaps not unexpected given the proximity of this 'up-gradient' well to Hangar 1. EPA does not view the results from MW05-301 (PFOA – 67 µg/l; PFOS – 31 µg/l) to be reflective of background, but rather they appear to suggest a broader impact related to Hangar 1.

Page-Specific Comments

4. Page 3 of 54, Executive Summary – The third paragraph states that, "the additional groundwater investigation will delineate the extent of PFOA and PFOS concentrations exceeding these values." The text further states, that, "The surface water and sediment investigation will focus on the east branch of French Stream near the FFTA and the TACAN ditch south of Hangar 1. Both of these areas may have been impacted by overland flow from the FFTA and Hangar 1, respectively." In order to insure that the delineation is complete, the scope of the investigation should be expanded to include surface water/sediment in the ditch to the west of the FFTA (i.e., on the west side of the runway). While it is agreed that the east branch of French Stream (i.e., east of the FFTA) would be expected to be the more significant receiving body for runoff from the FFTA, previous field efforts have identified a westerly pathway in ground water and surface water runoff from the FFTA. The wetlands here may dry up at certain points of the year, but all site plans (Figures 1-5) should be updated to include the location of the surface water drainage in this area of

the site. The site team should investigate this area during the site walkover. Similarly, the cranberry bog and associated wetlands directly east of the FFTA should be highlighted on site plans and included in the investigation. Please see also general comment regarding CSM, above.

5. Page 11 of 54, SAP Addendum Worksheet #5 -- Communication Pathways - The table entry regarding "Analytical data quality issues" should be expanded to include potential data quality issues that could occur prior to the sample's arrival at the lab. For instance, improperly developed ground water wells may yield samples which do not conform to standards, such as those presented in the EPA Region 1 Low Flow sampling protocols. These samples should be identified and reviewed before a decision to submit them for laboratory analysis is rendered. In this regard, the FOL should be added to the list of key personnel for this objective.

6. Page 16 of 54, SAP Addendum Worksheet #8a -- Project Scoping Session Participants Sheet - The third bullet states, "It was suggested that soil samples should be collected near the monitoring wells where groundwater samples were collected and then look at partitioning between the media." It is further noted in the last bullet that, "P. Marchessault stated that EPA might accept sampling soils adjacent to a few of the monitoring wells where groundwater samples were collected, rather than all the locations suggested in their comments. The comments from EPA and MassDEP on the draft Perfluorinated Compounds in Groundwater Project Report which suggested additional sampling were not specifically discussed." With regard to the technical issue of soil-water partitioning, it is not clear that the current CSM adequately addresses PFC fate and transport generally, and soil-water partitioning specifically. In this respect, while Worksheet #8A describes various iterations due to the sampling strategy due to the comment-response process, it is not clear that the current media sampling approach will cover all of the potential issues. As such, future phases of work cannot be ruled out at this time. Please see also general comment regarding CSM, above. A number of specific suggestions for additional sampling objectives are included here and in specific comments above, and below.

7. Page 19 of 54, SAP Addendum Worksheet #9 -- Conceptual Site Model – The third to last sentence in Section 9.4.2 states that, "The ASTs in Hangar 1 were filled via tanker truck immediately adjacent to the AST room in the northwest section of the Hangar. Spills on the hangar apron which were directed to the storm drain system may have infiltrated through soil into groundwater. " In this regard, in addition to the floor drain system at Hangar 1, the storm sewers in the vicinity of Hangar 1, as well as the subsurface beneath the AST itself and the fill pipes exterior to the Hangar should also be listed as potential routes of PFC release to the subsurface given the possibility for dispensing related releases. Product delivery may have resulted in direct discharges to the ground surface and/or overfills which may have penetrated beneath the release point via surface cracks. The storm sewers and other pertinent subsurface utilities should be added to the detailed Hangar 1 diagram (inset on Figure 2), and further assessed in regards to potential sampling locations. It may be useful

to provide a separate figure for the Hangar 1 area which displays the pertinent engineered structures in relation to proposed sampling locations in sufficient detail.

In regards to ground water, while the CSM acknowledges that the extent of the PFC problem in groundwater has not yet been delineated, a number of technical issues with respect to groundwater warrant additional consideration beyond what is presented here. For example, Figure 3 shows a distinctly south-southwesterly flow down-gradient of Hangar 1 (based on April 2010 data), but EPA's review of additional ground water level data sets from other dates (submitted in previous comments) suggests the possibility for westerly flow from Hangar 1, at least under some conditions. This is particularly relevant given the current CSM allows that, "MW05-031, located approximately 500 feet southeast of Hangar 1, was the furthest down-gradient location with a PFOS concentration that exceeded the provisional health advisory value." As such, *the current groundwater monitoring plan may be missing potential PFC migration to the west of MW05-031*, where no wells are currently planned for sampling. Similar concerns exist for the FFTA, despite the fact that the CSM states that, "The existing well network was determined to be adequate and sufficient for determining No Further Action for multiple suspected groundwater contaminants that would have spanned the types of physical properties exhibited by PFOA and PFOS." It should be noted that EPA's earlier reviews identified numerous issues with respect to the ground water monitoring network at FFTA, and it is not clear that all of the issues were resolved, and the status of the monitoring network following the massive excavation of petroleum-impacted soils conducted ca. 2006 is not clear. Additional consideration of groundwater sampling strategy and by extension, surface water and sediment sampling, appear to be warranted, with respect to both the known source areas, FFTA and Hangar 1. Detailed follow-on comments regarding groundwater issues are included in general and specific comments, above. Please also see comment on Figure 3, below.

8. Page 19 of 54, SAP Addendum Worksheet #9 -- Conceptual Site Model –Section 9.4.3, 2nd ¶, states that, "Detected concentrations of PFOA and PFOS at MW-52D2, located approximately 300 feet southeast and up-gradient of the FFTA operations area, did not exceed the provisional health advisories. The extent of groundwater contamination down-gradient of the FFTA has not been determined. The FFTA has been closed out under two regulatory programs, CERCLA and the Massachusetts Contingency Plan. The existing well network was determined to be adequate and sufficient for determining No Further Action for multiple suspected groundwater contaminants that would have spanned the types of physical properties exhibited by PFOA and PFOS." EPA does not consider the well network at the FFTA to be adequate with regards to determining PFC extent. Please see general comments (above) and Figure A (attached) for specific recommendations in this regard. It is not clear from Figure 3 that FFTA-MW-52D2 can be considered "upgradient'. It should be noted here that Figure 3 appears to have inappropriately contoured shallow and deep overburden head values together. Please supply an updated figure for FFTA which contours deep overburden only to supplement Figure 3. In any event, FFTA-MW-52D2 appears to exhibit impacts from FFTA operations. It is likely that PFCs

were introduced via surface runoff or directly into the wetlands east of the FFTA (and 'upgradient' from a ground water perspective). The CSM should be updated to acknowledge this, and the sampling scheme should be modified accordingly.

9 Page 22 of 54, SAP Addendum Worksheet #10 -- Data Quality Objective Specifications – The first sentence in Section 10.3 states that, "Shallow groundwater (to 20 feet bgs) continues to be the zone of interest for groundwater," but adds, "two overburden monitoring well couplets will be installed, a shallow and deep overburden pair, down-gradient of the FFTA and Hangar 1." What *data* supports the ground water problem as only being confined to the shallow ground water? Additional deep ground water data may be needed in future phases of investigation.

10. Page 22 of 54, SAP Addendum Worksheet #10 -- Data Quality Objective Specifications - Section 10.3, 2nd ¶, states that, "Soils in the vicinity (i.e. top of the adjacent monitoring well screen or above the water table, whichever is shallower) of the previous groundwater samples and also the new monitoring wells." Also, at Hangar 1, "Soils beneath the AFFF dispensing system in Hangar 1. The soils at the water table interface will be targeted for this portion of the investigation to determine if PFOA and PFOS are present in the soils beneath Hangar 1." Please explain the basis for the minor difference in approach for these two populations of soil sample targets.

11. Page 22 of 54, SAP Addendum Worksheet #10 -- Data Quality Objective Specifications - Section 10.3, 4th ¶, states that, "data from an up-gradient location are needed to determine surface water and sediment conditions unaffected by spills, releases, or use of AFFF. The Project Team determined that the data representing these areas would be sufficient to determine the presence of PFOA and PFOS in surface water and sediment." This statement is confusing. It will be necessary to delineate the limits of the PFOA/PFOS contamination in all pertinent media, including in the up-gradient directions. It is not yet clear that these up-gradient areas are "unaffected by spills."

12. Page 23 of 54, SAP Addendum Worksheet #10 -- Data Quality Objective Specification – The first sentence in Section 10.4 states that groundwater concentrations will be compared against both EPA provisional health advisories and Minnesota health-based values. Please add a note here that the two comparison values are identical, if that is the case.

13. Page 23 of 54, SAP Addendum Worksheet #10 -- Data Quality Objective Specifications - Section 10.4, 3rd ¶, states that, "If PFOA and PFOS concentrations in excess of the PSLs presented on WS #17 are observed in any of the perimeter groundwater samples or if the most down-gradient groundwater concentration exceeds the up-gradient concentration and the PSL, then additional data collection will be recommended to delineate the extent of PFOA and PFOS concentrations exceeding PSLs in groundwater; otherwise no additional delineation will be recommended for groundwater. For groundwater and other investigated media, the

findings of this investigation will be provided in property transfer documents." This sampling scheme is unnecessarily complicated, particularly since the presence of additional release or impacts in up-gradient areas has not yet been determined. It is incumbent on the Navy to simply delineate the nature and extent of the PFC contamination. See also General Comment 3, above.

14. Page 23 of 54, SAP Addendum Worksheet #10 -- Data Quality Objective Specifications - The first sentence in Section 10.5 states that, "The sampling design is based on a need to establish the extent of groundwater concentrations in known groundwater flow paths into which the target PFC analytes were released. Also, the design is based on a need to establish the presence or absence of concentrations of PFOA and PFOS in soil, surface water, and sediment in known groundwater flow paths. The number of samples was selected to ensure that the extent of the PFOA and PFOS contamination in groundwater can be determined and whether PFOA and PFOS are present at detected concentrations in soil, surface water, and sediment." EPA's analysis of ground water flow paths suggests that there are several additional areas where groundwater, surface water, and sediment sampling are needed. Please see General Comments, above.

15. Page 25 of 54, SAP Addendum Worksheet #12 -- Sampling Design and Rationale - Please see General Comments, above, and Figure A (attached) for additional ground water, surface water, and sediment sampling recommendations.

16. Page 29 of 54, SAP Addendum Worksheet #13 – Field Task Descriptions and Plan for Data Collection, Reporting and Review – Water Level Measurement - The text states that, "if NAPL is encountered at any monitoring well location, that location will not be included in the groundwater sampling program." If NAPL is encountered, the BCT should be notified. Are there any analytical interferences relative to PFCs which are relevant here?

17. Page 38 of 54, SAP Addendum Worksheet #14 -- Sampling Locations and Methods - Please see General Comments 1. and 2., above, concerning *conceptual site model (CSM)* and *Ground Water, Surface Water, and Sediment Sampling* areas for additional recommendations regarding sampling locations and media. A number of additional recommendations are as follows:

    - The soil sampling locations relative to Hangar 1 appear to be justified. However, as mentioned in the General Comments, it is difficult to comprehensively evaluate the locations because the site plan has not been updated with all of the subsurface utilities. For example, how were the OWS units connected to the base subsurface drainage system? How was the Hangar 1 drainage system connected to the base-wide system? Please provide a complete subsurface utility plan. Please also indicate the location of the fill pipes for the former AFFF ASTs. Depending on the location, additional samples may be required. For example, if these were located on the building exterior, a soil boring should be located in that area.

- ❖ Regarding ground water sampling down-gradient of Hangar 1, the inclusion of MW09-006, MW05-034 and proposed new wells H1-MW-2/2D appear to address the majority of the issues associated with the potential "westerly pathway" (see General Comments, above, and Figure A, attached). Consideration should still be given to installing additional well control to the west of the series of existing and proposed wells. A site walkover and detailed subsurface utility plan is needed in order to confirm the adequacy of the proposed H1-MW-2/2D locations.

- ❖ While the FFTA ground water program for this round of sampling appears to focus mainly on deep overburden ground water, consideration needs to be given to adding additional shallow ground water sampling locations so that data gaps do not result. As mentioned in the General Comments, above, FFTA-MW-11 should be added. While proposed wells FFTA-MW2 and FFTA-MW2D appear to be well located to address the comments included above (see General Comments, above, and Figure A, attached), a site walkover should be conducted to validate the proposed locations in relation to surface water channels, wetlands, and other features. Consideration should also be given to installing additional deep overburden control at FFTA-MW-61 in the "middle distance" along the "southwestern flow pathway". It is also necessary that additional shallow ground water control points are installed to the south along the east branch of French stream drainage in order to more carefully assess ground water surface water interactions along this migration pathway. It is likely that some component of ground water flow follows the stream system southward.

- ❖ Please provide an updated well inventory for the FFTA including X,Y, coordinates, screened intervals, and total depths. If any wells were replaced following the FFTA soil removal action, please supply updated boring logs and well installation diagrams.

- ❖ A shallow soil boring should be included adjacent of FFTA-MW-53D2.

- ❖ The sediment/surface water sampling strategy included in Table 14-2 is inadequate based on EPA's assessment of the CSM and ground water flow system. Additional sampling locations are needed for these media. Please see General Comments, above, and Figure A, attached

18. Page 44 of 54, SAP Addendum Worksheet #17 – Reference Limits and Evaluation Table – Although there is a footnote "1" below the table for groundwater/surface water, there is no reference to it in the table. Please revise. As discussed in the previous comment, if the Minnesota health-based values are identical to the EPA provisional health advisories, then the PSLs in the table could have both footnote "1" and footnote "3" associated with them.

19. Figure 3 - *GROUNDWATER ELEVATIONS - APRIL 20, 2010, HANGAR 1 AND FIRE FIGHTING TRAINING AREA, NAVAL AIR STATION SOUTH WEYMOUTH, WEYMOUTH,* MASSACHUSETTS – A detailed examination of Figure 3 points to numerous areas where ground water characterization for PFCs can be improved, either for this phase or future phases of investigation. Understanding the groundwater flow system drives a number of related issues germane to the characterization of PFCs in various media, including the following:

- Groundwater flow directions vary with time depending on water levels in the aquifer. An assessment of flow directions must therefore consider a reasonable range of aquifer conditions. Flow directions and source area locations dictate appropriate down gradient ground water sampling locations.
- Water table fluctuations in a particular well vary considerably in response to a variety of factors. Sampling strategies linked to water table position must therefore consider the data record, and the anticipated range of water table fluctuation and position of the water table at the time of sampling.
- Groundwater discharge to surface water and sediment is spatially variable. Groundwater flow directions as well as the characteristics of the surface water body (i.e., gaining or losing) dictate appropriate surface water and sediment sampling locations.

With these issues in mind, an examination of Figure 3 points to several areas where additional sampling may be needed. With respect to flow directions, as noted above in the comments for the CSM, Figure 3 shows a distinctly south-southwesterly flow down-gradient of Hangar 1 (based on April 2010 data), but EPA's review of additional ground water level data sets from other dates (submitted in previous comments) suggests the possibility for westerly flow from Hangar 1, at least under some conditions, especially in the near-field down-gradient areas. MW05-031 is in a pivotal location. This is particularly relevant given the current CSM allows that, "MW05-031, located approximately 500 feet southeast of Hangar 1, was the furthest down-gradient location with a PFOS concentration that exceeded the provisional health advisory value." As such, *the current groundwater monitoring plan may be missing potential PFC migration to the west of MW05-031*, where no wells are currently planned for sampling. It may be necessary to evaluate ground water conditions north and west of MW05-031 in order to close this potential 'data gap'. At a minimum, additional shallow piezometers should be installed north, west and south of MW05-031 in order to facilitate future collection of water level data for the purposes of establishing flow directions. MW05-34 and MW09-008 should be added to the sampling program.

With respect to ground water flow directions at the FFTA, Figure 3 shows consistent southwesterly flow directions down-gradient of the FFTA. While PZ-11D provides some monitoring with respect to surface water flow down-gradient of the FFTA source, ground water is essentially unmonitored down-gradient (to the southwest). At a minimum, additional monitoring wells appear to be needed to the southwest of FFTA-MW-46 and FFTA-MW-14, and FFTA-MW-11Dshould be added to the monitoring program..

It should be noted that intermittent wetlands and associated drainage channels exist in the grassy area west of the FFTA and east of the TACAN ditch. Previous EPA comments have highlighted manifestations of groundwater with hallmarks of potential FFTA impacts discharging to these surface water features. Sediment and surface water sampling needs to include these areas. Similarly, the cranberry bog and associated wetlands directly east of the FFTA should be highlighted on site plans and included in the surface water and sediment investigation, as these areas likely received direct input of AFFF. A comprehensive site walkover of the FFTA is needed.

Ground water flow patterns shown on Figure 3 also indicate that flow lines appear to leave the base near the southwest corner rather than the southernmost boundary where the French stream exits. In this respect, potentially impacted unmonitored ground water may be leaving the base in the area south of TLF-MW-55D, or alternatively it may be discharging to French stream in this area. Additional ground water, surface water, and sediment monitoring is needed in the general region approximately 1000 downstream of TLF-MW-55D within (surface water and sediment) and up-gradient (i.e., to the northeast of the stream for ground water). A site walkover is also needed in this area of the base. EPA has commented on this fairly consistent ground water pattern several times in the past, e.g., in the context of potential off-site transport of metals contamination in surface water, sediment, and ground water. A robust monitoring network has yet to be installed.

Lastly, a closer look is needed in regards to the range of water table fluctuation from the historical database from existing on-site wells. This information may point to minor depth adjustments pertaining to planned soil samples just above the water table.

Figure A. Additional Recommended Groundwater, Surface Water and Sediment Sampling Areas